

## HISTORICAL NOTES

Ottorino Rossi was born on 17th January, 1877, in Solbiate Comasco, a tiny Italian village near Como. In 1895 he enrolled at the medical faculty of the University of Pavia as a student of the Ghislieri College and during his undergraduate years was an intern pupil of the Institute of General Pathology and Histology, which was headed by Camillo Golgi. In 1901 Rossi obtained his medical doctor degree with the highest grades and a distinction. In October 1902 he went on to the Clinica Neuropatologica (Hospital for Nervous and Mental Diseases) directed by Casimiro Mondino to learn clinical neurology. In his spare time Rossi continued to frequent the Golgi Institute which was the leading Italian center for biological research. Having completed his clinical preparation in Florence under Eugenio Tanzi, and in Munich at the Institute directed by Emil Kraepelin, he taught at the Universities of Siena, Sassari and Pavia. In Pavia he was made Rector of the University (from 1925 to 1936) and was instrumental in getting the buildings of the new San Matteo Polyclinic completed.



Ottorino Rossi made important contributions to many fields of clinical neurology, neurophysiopathology and neuroanatomy. These include: the identification of glucose as the reducing agent of cerebrospinal fluid, the demonstration that fibers from the spinal ganglia pass into the dorsal branch of the spinal roots, and the description of the cerebellar symptom which he termed "the primary asymmetries of positions". Moreover, he conducted important studies on the immunopathology of the nervous system, the serodiagnosis of neurosyphilis and the regeneration of the nervous system. He was the author of major scientific works including an extensive investigation of arteriosclerosis in the brain, giving a new interpretation of the development of lesions of vascular origin. He died in 1936 at the age of 59, having named the Ghislieri College as his heir. Ottorino Rossi was one of Camillo Golgi's most illustrious pupils as well as one of the most eminent descendants of Pavia's medico-biological tradition.

Since 1990, thanks to an initiative of the new Scientific Director (Prof. Giuseppe Nappi), the C. Mondino National Institute of Neurology Foundation, IRCCS has held an annual Ottorino Rossi Award Conference at which the award is presented to a scientist who has made an important contribution to research in the field of the neurosciences.

The period 2010-2012 was devoted to *The Founders of Neurology* and saw the prize awarded to the founders of the most important Italian Schools of Neurology of the twentieth century.

In 2013, the Ottorino Rossi Award again became a prize for internationally recognized neuroscientists.

## SCIENTIFIC SECRETARIAT

Egidio D'Angelo, Claudia Gandini Wheeler-Kingshott, Emilio Perucca  
IRCCS C. Mondino, University of Pavia

## COORDINATION

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## ORGANIZING SECRETARIAT

Bquadro Congressi  
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Conference registration: [www.mondino.it](http://www.mondino.it) (see "Iscrizione Eventi")

## CONTINUING MEDICAL EDUCATION ACCREDITATION

This event is organized within the Continuing Medical Education-Continuing Professional Development (ECM-CPD) system. It is worth 3.5 credits for all health professionals.

To obtain the credits it is necessary to attend the full day, and correctly answer 80% of the questions.

## AWARDING COMMITTEE OTTORINO ROSSI AWARD 2016

Enrico Alleva, Rome  
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Giovanni Scapagnini, Campobasso  
Paolo Stanzione, Rome  
Gioachino Tedeschi, Naples  
Tomaso Vecchi, Pavia  
Pierangelo Veggiotti, Pavia

## OTTORINO ROSSI AWARD PREVIOUS WINNERS

Vittorio Ersparmer - Rome (Italy) (1990)  
Paolo Pinelli - Milan (Italy) (1991)  
Giovanni Di Chiro - Bethesda (USA) (1992)  
Clarence Joseph Gibbs - Bethesda (USA) (1993)  
David Zee - Baltimore (USA) (1994)  
Elio Lugaresi - Bologna (Italy) (1995)  
Michel Fardeau - Paris (France) (1996)  
Salvador Moncada - London (UK) (1997)  
Alain Berthoz - Paris (France) (1998)  
Ottar Sjaastad - Trondheim (Norway) (1999)  
John Timothy Greenamyre - Atlanta (USA) (2000)  
Salvatore DiMauro - New York (USA) (2001)  
Elio Raviola - Boston (USA) (2002)  
Michael Welch - Chicago (USA) (2003)  
François Boller - Paris (France) (2004)  
Jes Olesen - Copenhagen (Denmark) (2005)  
Stanley Finger - S. Louis (USA) (2006)  
Michael A. Moskowitz - Boston (USA) (2007)  
Patricia Smith Churchland - S. Diego (USA) (2008)  
Stephen P. Hunt - London (UK) (2009)  
Vincenzo Bonavita - Naples (Italy) (2010)  
Cesare Fieschi - Rome (Italy) (2011)  
Giorgio Bernardi - Rome (Italy) (2012)  
Henry Markram - Lausanne (Switzerland) (2013)  
Emmanuele A. Jannini - L'Aquila (Italy) (2014)  
Roberto Crea - Hayward (CA-USA) (2015)



IRCCS FONDAZIONE ISTITUTO  
NEUROLOGICO NAZIONALE C. MONDINO

Direttore scientifico: E. Perucca



UNIVERSITÀ DEGLI STUDI  
DI PAVIA

Magnifico Rettore: F. Rugge

Tuesday, 11 October 2016

# BIG DATA FOR NEUROSCIENCE

## XXVII Ottorino Rossi Award

GOLGI HALL  
PALAZZO BOTTA  
UNIVERSITY OF PAVIA  
PIAZZA BOTTA  
PAVIA

## BACKGROUND TO THE EVENT

What does “big data” mean for medicine? Why is it so important? Despite advances in neurological and medical research, countless unresolved questions remain. Exploration of the human brain, in particular, is a fascinating quest involving numerous individual efforts. But barriers can be overcome only if we tackle them collectively, exploiting expertise and knowledge from different disciplines. We are good at producing data in our own labs with our own optimized techniques, but this is not enough to understand the diversity and complexity of the human brain and the pathologies that affect its functioning. There is increasing evidence that the “big data” approach, which exploits rapidly evolving computer technology to develop machine learning algorithms for processing data and classifying diseases, can really make a difference. But the creation of “big data” (multimodal imaging, clinical scores, neuropsychological data, genetics and so on) demands consortiums and collaborative efforts. The value of big data is reflected in the considerable funding received by visionary projects such as the Human Brain Project (HBP).

10.00 **Registration**

10.30 **Welcome Address**

*F. Rügge, E. Perucca (Pavia)*

### **Ottorino Rossi Award Ceremony**

*Chairpersons: G. Scalera (Roma), P. Mazzarello (Pavia)*

10.45 **Ottorino Rossi and Ottorino Rossi Award**

*P. Mazzarello, G. Nappi (Pavia)*

11.00 **Neuroscience Networks**

*G. Scalera (Roma)*

11.10 **The Human Brain Project and Richard Frackowiak**

*E. D’Angelo (Pavia)*

11.20 **Ottorino Rossi Award Lecture**

**The Impact of Informatics on Brain Medicine: Theoretical and Practical Considerations**

*R. Frackowiak (Lausanne)*

12.10 **Presentation of the Award**

*F. Rügge, E. Perucca (Pavia)*

12.30 **Light Lunch**

### **Neuroinformatics, Neuroimaging and Big-Data in Neuroscience**

*Chairperson: R. Bellazzi (Pavia)*

14.00 **Medical Informatics and Federated Data Analysis in Neuroscience Networks**

*K. Ferath (Lausanne)*

14.30 **Brain Imaging between Informatics and Advanced Techniques**

*S. Bastianello (Pavia)*

15.00 **Advanced Neuroimaging and Connectomics**

*C. Gandini Wheeler-Kingshott (Pavia, London)*

15.30 **Discussion**

15.45 **Coffee Break**

## Young Investigators Session

*Chairpersons: E. Perucca, C. Cereda (Pavia)*

16.15 **Machine learning: a step-change in differential diagnosis of neurological diseases**

*G. Castellazzi (Pavia)*

16.30 **Next Generation Sequencing Data for Personalized Diagnosis in Rare Neurological Diseases**

*S. Zucca (Pavia)*

16.45 **Muscle Disorders and MRI: Present and Future**

*A. Pichiecchio (Pavia)*

17.00 **New Approaches in Neuronal Network Research**

*L. Mapelli (Pavia)*

17.15 **Conclusions**

## ABOUT THE AWARDEE

Richard Stanislaus Joseph Frackowiak was born in London in 1950. He studied medicine at the University of Cambridge. In 1979, he joined the Medical Research Council’s Cyclotron Unit at Hammersmith Hospital, home of one of Britain’s first PET scanners. From 1998 to 2008 Professor Frackowiak directed the Laboratory of Neuroimaging at IRCCS Fondazione Santa Lucia in Rome, collaborating in this period with Ferruccio Fazio, former Italian health minister and pioneer in the use of PET. Professor Frackowiak has carried out cutting edge neuroimaging research in many European centers, mainly relating to the application of MRI techniques to the study of the human brain, his research focus being the neural mechanisms that coordinate cognitive and emotional brain functions.

Thanks to his impressive scientific output (over 340 publications in prestigious scientific journals), Professor Frackowiak was the fourth most cited British biomedical scientist in the 1990s.

In 1995, as Professor of Cognitive Neurology at University College London (UCL), he established the Functional Imaging Laboratory (FIL), now the Wellcome Trust Centre for Neuroimaging, and also developed innovative MRI techniques that are now widely applied to study neurodegenerative diseases, including Alzheimer’s disease.

Professor Frackowiak has received numerous international awards including the Wilhelm Feldberg Prize (1996), the Ipsen Prize for Neuroplasticity (1997), and the Klaus Joachim Zulch Prize (2004). The prestigious Ipsen award, conferred for “studies on the organization of cortical maps and their plasticity” was a special achievement. In a study conducted in London taxi drivers, Professor Frackowiak, together with colleagues Antonio Damasio and Michael Merzenich, demonstrated a close relationship between the hippocampus and spatial-navigational skills. These skills were particularly well developed in taxi drivers, who were also found to have a larger than average hippocampus. It was concluded that this area of the brain had developed as a result of their experience in navigating the capital city and their own cortical maps.

Professor Frackowiak is scientific advisor to the Director-General of the Institut National de la Santé et de la Recherche Médicale (INSERM) in France; he has worked at the Agence



Nationale de Recherche (ANR) in France, and also held other prestigious international positions. He has been President of the British Neuroscience Association, Dean of the Institute of Neurology at UCL (1998–2002), and Director of the Department of Cognitive Studies at the Ecole Normale Supérieure in Paris (2003–2009). He is head of the Department of Clinical Neurosciences at the Université de Lausanne and previously directed its Centre Hospitalier Universitaire Vaudois (CHUV). He is co-director of the Human Brain Project (HBP), within which he is a task leader in the Medical Informatics Platform. He is a permanent visiting professor at the Ecole Normale Supérieure in Paris. He has directed numerous international journals and is currently Editor-in-chief of Current Opinion in Neurology and Editor Emeritus of NeuroImage.

## SPEAKERS AND CHAIRPERSONS

**Fabio Rügge**, President, IRCCS C. Mondino; Rector of the University of Pavia

**Emilio Perucca**, Scientific Director, IRCCS C. Mondino; Department of Internal Medicine and Therapeutics, University of Pavia

**Giselda Scalera**, General Direction of Health related Research and Innovation, Italian Health Ministry, Rome

**Paolo Mazzarello**, Department of Brain and Behavioral Sciences and University Museum System, University of Pavia

**Giuseppe Nappi**, Scientific Director Emeritus and Pavia Headache Center, IRCCS C. Mondino, Pavia

**Egidio D’Angelo**, Brain Connectivity Center, IRCCS C. Mondino, Pavia; Department of Brain and Behavioral Sciences and Human Brain Project, Director CDP2, University of Pavia

**Richard Frackowiak**, Department of Clinical Neurosciences, University of Lausanne

**Riccardo Bellazzi**, Department of Industrial Engineering and Information Technology, University of Pavia

**Kerif Ferath**, IREN, Department of Clinical Neurosciences, Vaudois University Hospital (CHUV), Lausanne

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**Claudia Gandini Wheeler-Kingshott**, UCL Institute of Neurology, London; Department of Brain and Behavioral Sciences, University of Pavia; Brain MRI 3T Mondino Research Center, IRCCS C. Mondino, Pavia

**Cereda Cristina**, Genomics and Post-Genomics Center, IRCCS C. Mondino, Pavia

**Gloria Castellazzi**, Department of Electrical, Computer and Biomedical Engineering, University of Pavia; Brain Connectivity Center, IRCCS C. Mondino, Pavia

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**Anna Pichiecchio** Radiology and Diagnostic Imaging Unit, IRCCS C. Mondino

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